

REMARKS

In paragraph 1 of the Office Action claims 13 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement, stating:

"The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The body specification does not appear to have the ranges of low energy being "less than approximately 20 eV" or "from approximately 10 eV to approximately 20 eV" recited therein. These ranges are not new matter, because the original claim 22 had the latter, supporting the highest upper limit; page 5, line 10 teaches "less than or equal to approximately 10 eV"; and page 8 teaches "10 to 20 eV" (no approx.), however to be properly enabled body of the specification need to teach the whole range. Also see discussion on p 2 of paper #9, mailed 3/31/2003.

Also, where is the support for the new range limit for high-energy carbon ions in claim 13 of > 50 eV? It is not in the original claims, which include this lower limit as an intermediate energy range, thus appears to contradict the original specification."

Responsive hereto Applicant has amended both the specification and the claims to cure this ground of rejection. Specifically, with regard to the second paragraph of the rejection, Applicant has amended the specification in the paragraph beginning on page 8, line 1 to recite the full range of from approximately 10 to approximately 20 eV, as is suggested in the rejection. In that this range was previously recited in the claims, no new matter is added through this amendment to the specification.

With regard to the third paragraph of the rejection that inquires about the support for the new range limit for high-energy carbon ion in claim 13 of greater than 50 eV, Applicant has amended claim 13 to delete the confusing phrase "relatively high", and replace it with the word "subsequent". Support in the specification for this limitation is provided in the example set forth in the paragraph commencing on page 10, line 15 wherein an intermediate overcoat layer is deposited with an ion beam energy level of approximately 50 eV, which is followed by a further overcoat layer that is formed with an ion beam energy of approximately 100 eV. In describing these overcoat layers in the single limitation of claim 13, Applicant submits that they are properly described as a subsequent thickness portion of the DLC layer that is formed utilizing at least one subsequent carbon ion beam energy of greater than approximately 50 eV. Furthermore, the specification, page 11, lines 8-10 provide support for two step gradient, a multiple step gradient and a smooth energy gradient. Applicant therefore respectfully submits that support in

the specification exists for the limitations set forth in claim 13, and that this ground of rejection has therefore been satisfied.

In paragraph 2 of the Office Action claims 13-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, stating:

"The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Calling the high-energy > 50 eV appears to be unsupported hence New Matter. See above discussion, and note original claim 15-17."

Responsive hereto, as discussed above, Applicant has amended claim 13 to delete the confusing terminology of "relatively high carbon ion beam energy of greater than approximately 50 eV", and replace it with the phrase "subsequent carbon ion beam energy of greater than approximately 50 eV." Applicant submits that this amendment clarifies the claim language, which is supported in the specification as discussed above, and that this ground of rejection is thereby satisfied.

In paragraphs 3 and 4 of the Office Action claims 13-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Falabella (5,763,087), in view of Ueda et al (5,776,602), optionally in view of Schmidt if al (5,750,210), as discussed in section #4 of paper #9 (3/31/03), stating:

"Applicant has clarified ion energy ranges in all their independent claims, however as previously noted Falabella suggest useful energies covering claimed energies, ie. 20eV to 200eV, where the suggestion of grading is present, especially when combined with Ueda et al (602). While applicants call each of their separate energy deposited coatings a layer with a thickness, they may equally be considered sub-layers of the total carbon layer, and one could label the graded sub-layers of the above combination separate layers also. As presently claimed, this layer distinction is only a semantics argument, unless the claims are given more significant substance related thereto.

Applicants arguments filed 7/3/03 and discussed above have been fully considered but they are not persuasive."

While Applicant has amended certain of the claims with regard to the Section 112 rejections discussed above, Applicant respectfully traverses this ground of rejection and asserts that the limitations set forth in these claims are not obvious from the teachings of the cited prior art.

Specifically, while the cited prior art, as pointed out by the Examiner, does discuss the general concept of altering carbon ion beam deposition parameters, there is no teaching or suggestion in the prior art that renders obvious Applicant's deposition method and its particular combinations of parameters.

For instance, the Examiner's attention is directed to method claims 27 and 28. Where, in the teachings of the prior art is it taught or suggested that a subsequent thickness DLC layer is deposited with a higher carbon ion beam energy, where a portion of the carbon ion species of the subsequent thickness portion penetrates into the initial thickness portion and not into the magnetic media layer, where another portion of that subsequent layer is deposited on top of the initial thickness portion (claim 27). And where in the cited prior art is it taught or suggested that a further thickness portion is deposited upon the subsequent thickness portion where carbon ion species of the further thickness portion penetrate into both the subsequent thickness portion and into the initial thickness portion but not into the magnetic media layer, where a portion of that further thickness portion is deposited on top of the subsequent thickness portion (claim 28)? The mere suggestion in the prior art of the deposition of a carbon layer with graded energy does not render Applicant's process obvious. Applicant submits that there is no teaching or suggestion in the prior art for this process.

Additionally, focusing on claim 18, where, in the cited prior art is a process for fabricating a DLC layer taught or suggested wherein the DLC layer has an initial thickness of approximately 10 Å following the deposition of an initial thickness portion (formed with a less than 20 eV ion beam (claim 13)), and the DLC layer has a thickness of approximately 19 Å following the deposition of an intermediate thickness portion (formed with an approximately 50 eV ion beam (claim 17)), and the DLC layer has a final thickness of approximately 25 Å following the deposition of a subsequent thickness portion? Significantly, these thicknesses are not arbitrary, but they are related to the energy level of the carbon deposition ion beams, in that a certain thickness of carbon layer is necessary to provide absorption of the higher energy carbon ions, such that the higher energy carbon ions do not penetrate through the previously deposited DLC carbon layer and into the underlying magnetic layer. There is no teaching or suggestion in the prior art for this process.

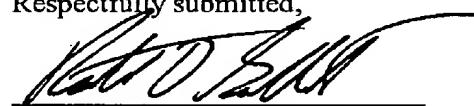
Applicant therefore respectfully submits that the application contains claims as previously submitted, and claims as amended to overcome the Section 112 rejections of

paragraphs 1 and 2 of the Office Action, which contain limitations that are not obvious from the cited prior art.

In paragraph 5 of the Office Action it is indicated that Applicant's arguments filed 7/3/03 have been fully considered. Applicant appreciates the Examiner's consideration thereof.

Having responded to all of the paragraphs of the Office Action, and having amended the claims accordingly, Applicant respectfully submits that the Application is now in condition for allowance. Applicant therefore respectfully requests that a Notice of Allowance be forthcoming at the Examiner's earliest opportunity. Should the Examiner have any questions or comments with regard to this amendment, a telephonic conference at the number set forth below is respectfully requested.

Respectfully submitted,



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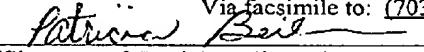
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I hereby certify that this paper (along with any referred to as attached or enclosed) is being transmitted on the date shown below to the Commissioner for Patents, Washington, D.C.

January 7, 2004  
(date)

Via facsimile to: (703) 872-9306  
  
(Signature of Patricia Beilmann)